appear in the future. Even if this should not be so, the work will by no means have been wasted, since a program is available to check the logic of additions to or changes in Sabrac and of any new machines or devices as these are designed. The advantages of such parallel checking are obvious and need not be detailed.

An extension of the present program would also permit its use for the simulation of asynchronous devices, but no work has yet been undertaken in this direction.

The present project has also suggested a further research program which would investigate the possibility of mechanizing all or part of the actual design process. It would appear possible to derive automatically a set of equations which mechanize the execution of any specified (computable) function. Several possible approaches to this problem exist, and it is hoped to undertake an investigation which will determine methods yielding useful results in a reasonable amount of machine time.

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Book review: Management

Management and the Computer of the Future, edited by M. Greenberger, 1962; 340 pages. (Cambridge, Mass.: *The M.I.T. Press*; London: *The Book Centre, Ltd.*, 57s.)

This book consists of the transcription of a fascinating series of eight evening lectures given at the Massachusetts Institute of Technology in 1961, its centenary year. Even more interesting are the discussions, recorded here in full. Many well-known names in the American computer scene appear in them, with that of J. McCarthy well to the fore, attached to frequent penetrating remarks.

Although the focal point was management, the lectures represented a wide field, and much that was of interest to managers (and, indeed, to all of us) came out of frank speaking on a variety of technical subjects. McCarthy himself, for example, speaking on "Time-Sharing Computer Systems," gives a picture of the way he sees the computer business developing in the future. Later he gets involved in an argument with J. R. Pierce who, in a talk on "What Computers Should Be Doing," deprecates attempts to make computers do things that people can obviously do better; McCarthy feels that this is not looking far enough ahead.

J. G. Kemeny, a mathematician and editor, describes his idea of "A Library for 2000 A.D.": many millions of volumes stored on tape, accessible from anywhere in the country by closed circuit television. McCarthy feels that computer techniques at least as powerful as those projected by Kemeny will be available in 1965. On the indexing problem, however, little light is shed: Kemeny's picture is naïve, but no confident alternatives are put forward.

To those of us who face it, "The Computer in the University" as proposed by A. J. Perlis is the biggest attraction in the book. Perlis is an extreme visionary, and even if we do not share his views we can gain a lot from his stimulating account of future classroom life with the computer. He shrinks from no aspect of the subject. Some of his comments seem revolutionary, at least to us in Britain, and yet the lively discussion which follows brings out no real disagreement among those present. It is, in fact, a clear illustration of how the climate of intellectual thought in American universities has accepted the computer; a result, no doubt, of the policy of the National Science Foundation which Perlis praises for having provided "funds so that universities not only could have computers, but could have good ones."

Indeed, it is a depressing reflection that one simply cannot imagine discussions of such breadth and depth as those reported in this book, occurring here. Even those talks which present no really new material, "Managerial Decision Making," by J. W. Forrester, "Simulation of Human Thinking," by H. A. Simon and A. Newell, and "A New Concept in Programming," by G. W. Brown, represent viewpoints which, though well established in the U.S.A., would be somewhat revolutionary in this country.

There is some comfort in the fact that the introductory lecture, which would in fact have been more appropriate as an epilogue, was given by an Englishman, Sir C. P. Snow. Snow has no detailed knowledge of computers, but his perspicacity points out their social consequences more clearly than others could. His audience, led by E. E. Morison and Norbert Wiener, rises to the occasion. Why do people like Sir Charles not address British audiences on these matters? Are there no invitations? Or are we so lacking in our grasp of the new technology that their words would be wasted?

S. GILL.